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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,870	10/12/2001	Ronald Arthur DuBose	ETACI	9713

6980 7590 09/25/2003

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EXAMINER

SPITZER, ROBERT H

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 09/25/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/975,870

Applicant(s)

DUBOSE ET AL.

Examiner

Robert H. Spitzer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 1724.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. The abstract of the disclosure is objected to because of undue length, as it is approximately 194 words long. Correction is required. See MPEP § 608.01(b).

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The figures of drawing are objected to because of the following reasons: on Fig. 1, there is no description in the specification of numbers 26 and 36; on Fig. 3, there is no description of number 107; and on Fig. 8, there is no description of number 84.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1,2,8,9,14,15,17,18 and 20-22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the structure of the device of DuBose (6,013,385), wherein exchange matrix 46 is housed within a housing assembly 44 (enthalpy transfer means) for treatment of the feed air to and the exhaust gas from a fuel cell.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3-5,7,10-13,16,19,25,26 and 34-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Siggelin (3,176,446). The claims differ from the structure of DuBose ('385) in the exchange matrix being made of a material having a linear coefficient of thermal expansion at 25 to 800°C of less than about $20 \times 10^{-7}/^{\circ}\text{C}$. Siggelin ('446) shows that a ceramic exchange matrix can have a linear coefficient of thermal expansion at 25 to 300°C of -2×10^{-7} , which is clearly below 20. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to utilize a material for the enthalpy wheel of DuBose which has a linear coefficient of thermal expansion of less than $20 \times 10^{-7}/^{\circ}\text{C}$, in view of the showing of such material being used within an exchange matrix by Siggelin ('446).

10. Claims 6 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Siggelin (3,176,446), as applied in the paragraph directly

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above, further in view of Goto (6,521,026). The claims differ from the structure of modified DuBose ('385) in the exchange matrix being structured as a plurality of fully segmented sections. Goto ('026) shows that such a plurality of fully segmented sections to an exchange matrix are known to the art. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to structure the exchange matrix of modified DuBose ('385) to consist of a plurality of fully segmented sections, in view of the showing of Goto ('026), as such structure would allow for easier replacement of any portion of the exchange matrix without having to change all of the sections.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Teller (3,183,649). The claim differs from the disclosure of DuBose ('385) in the use of a seal for the rotating enthalpy wheel. Teller ('649) shows the use of a seal for a rotating exchange matrix which has an inflatable seal (using a sealing fluid). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide an inflatable seal for the rotating enthalpy wheel of DuBose ('385), in view of the showing of Teller ('649), so that the wheel does not allow communication between the two streams which are passing therethrough.

12. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Wenner (3,780,498). The claim differs from the structure of DuBose ('385) in the use of a frictional seal between the enthalpy wheel and its housing. Wenner ('498), in Fig. 4, shows the use of frictional seals between a rotating exchange matrix and its housing. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide a frictional seal for the rotating

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enthalpy wheel of DuBose ('385), in view of the showing of Wenner ('498), so that the wheel does not allow communication between the two streams which are passing therethrough.

13. Claims 28 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Siggelin (3,176,446), as applied in paragraph no. 9 above, further in view of Wenner (3,780,498), who applies as in the paragraph directly above. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide a frictional seal for the rotating enthalpy wheel of modified DuBose ('385), in view of the showing of Wenner ('498), so that the wheel does not allow communication between the two streams which are passing therethrough.

14. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Siggelin (3,176,446), as applied in paragraph no. 9 above, further in view of Miller (2,617,986). The claim differs from the structure of modified DuBose ('385) in the use of spring loaded seals for the rotating enthalpy wheel. Miller ('986) shows that spring loaded seals (in Figs. 3,5 and 6) can be used to seal the ends of a rotating matrix from its housing and the streams passing therethrough. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide a spring loaded seal for the rotating enthalpy wheel of modified DuBose ('385), in view of the showing of Miller ('986), so that the wheel does not allow communication between the two streams which are passing therethrough.

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15. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose (6,013,385) in view of Siggelin (3,176,446), as applied in paragraph no. 9 above, further in view of Teller (3,183,649), who applies as in paragraph no. 11 above. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide an inflatable seal for the rotating enthalpy wheel of modified DuBose ('385), in view of the showing of Teller ('649), so that the wheel does not allow communication between the two streams which are passing therethrough.

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 4-16, 19-24 and 27-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 is indefinite because there is no direct antecedent basis for the recitation of "said housing enclosure". Claims 8-10 and 12 are indefinite because there is no direct antecedent basis for the recitation of "said exchange medium". Claim 11 is indefinite because there is no direct antecedent basis for the recitation of "said magnesium aluminum silicate" in claim 9. Claim 13 is indefinite because it recites "media element" without any correlation to "an exchange matrix" previously recited in claims 1 and 3. Claims 14-16 and 22 are indefinite because there is no direct antecedent basis for the recitation of "the enhancement technique". Claim 19 is indefinite because there is no direct antecedent basis for the recitations of "the media" and "the wheel". Claim 20 is indefinite because there is no direct antecedent basis for the recitation of "the media element and sealing system". Claim 23 is indefinite

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because there is no direct antecedent basis for the recitations of "the sealing system" and "the media". Claim 24 is indefinite because there is no direct antecedent basis for the recitations of "the media element" and "the housing enclosure". Claim 27 is indefinite because it recites "media element" without any correlation to "an exchange matrix element" previously recited in claim 25. Claim 28 is indefinite because there is no direct antecedent basis for the recitations of "the sealing system" and "the media element". Claim 29 is indefinite because there is no direct antecedent basis for the recitation of "the sealing force". Claim 30 is indefinite because there is no direct antecedent basis for the recitation of "the media". Claim 31 is indefinite because there is no direct antecedent basis for the recitation of "said first and second plates" and because it recites that the species transfer is "from the second stream to the first stream" which is the opposite of the last two lines of claim 25. Claim 32 is indefinite because there is no direct antecedent basis for the recitation of "said compression subassembly". Claims 34, 35 and 37 are indefinite because there is no direct antecedent basis for the recitation of "said exchange medium". Claims 5-7, 33 and 36 are indefinite because they depend from the above indefinite claims.

18. The remaining references listed on both the PTO-892 and the PTO-1449 show art of interest, with the check-marked references listed on the PTO-892 having been cited by Applicants in their specification.

19. Applicants' response to this Office action should also include the following editorial changes: page 5, line 9, "be" should be inserted before "larger"; page 6, line 24, "is an" should be "is a"; page 8, line 25, "gasses" should be "gases"; page 9, line 9, "first

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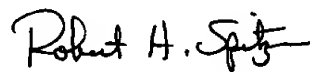
stream 30" should be "first stream 20"; page 10, line 8, "to active" should be "to as active"; and, page 16, line 16, "42" should be "48".

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert H. Spitzer whose telephone number is (703) 308-3794. The examiner can normally be reached on Monday-Thursday from 5:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver, can be reached on (703) 308-1261. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Robert H. Spitzer
September 16, 2003



Robert H. Spitzer
Primary Examiner
Art Unit 1724

September 16, 2003